10/01/01

Mr Mike Salmans
Contract Technical Representative, Subcontract Number KH001076OZ
Kaiser-Hill Company, L L C
Rocky Flats Environmental Technology Site
P O Box 464
Golden, CO 80402-0464

Dear Mr Salmans,

On September 25, 2001, Canberra Mobile Laboratory Services (CMLS) received 67 smears to be counted as a single sample using gamma spectroscopy using On-Site Radiological Screening by Gamma Spectrometry, RC10B, Batch No 0109254467 The Run for this batch is 01D1516 The samples were requested to be counted as a Laboratory Non-standard ISOCS sample A 7 Day Results Only package, containing the items specified in contract No KH001076OZ dated February 1, 2000 and updated July 1, 2001 has been requested for this sample

The samples were counted using ISOCS The samples had QA/QC appropriate to this type of analysis Results of the analysis are attached in the batch report narrative

The activity reported for Th-234 is the recommended activity for U-238

The samples were counted for 3600 seconds This count time was sufficient to meet the detection limit requirements of all analytes except for Am-241

For your convenience, please find attached a sample cross-reference listing of Project sample identification numbers and the corresponding CMLS laboratory ID designator

If you have any questions please do not hesitate to call at 303-966-7946

Sincerely,

Larry Umbaugh
Laboratory Director, Canberra Mobile Laboratory Services

1/11

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COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0109254467
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
01D1516#002	01D1516-001 001	01D1516-001 001	CMLS-599	G1900005	RC10B019

Calibration Package ID Object individually modeled using ISOCS

Comments

Sample was counted in T130A using LeGe Detector LI004

Certification Statement

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature "

Larry Umbaugh
Signature

Date 10/01/01

Laboratory Director
Title

2

CHAIN OF CUSTODY

RISS

REETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01D1516#001

Page 1 of 1

Sampler(s) (time/date)	Contact/Requester JOHNSEN, SHELLY/BRITTEN, JAY	Telephone No. 6401/3050
RIN 01D1516	Sampling Origin 883	Purchase Order/Charge Code RSID30120
Project Title RSS1 SUMPS, TRENCHES	Logbook No.	Ice Chest No. Temp.
To (Lab) Canberra Mobile Lab Service	Method of Shipment	Bill of Lading/Air Bill No.
Protocol	Related COC (if any)	FRE

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
SAMPLE 01D1516-001.001 IS TO BE CONSIDERED 1 PACKAGE, CONTAINING 4 PACKAGES
Faxed 9-25-01 SL

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative / Packing
01D1516-001 001		SOLID			B883	1-L / N/A /1	RC10B018 (GS-I-N/S-Lab-Natd ISOCS-Solid) [7dR]	None None

9-25-01

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	9/25, 09:19	[signature]	9-25-01 0920	[signature]	9-25-01 0945	[signature]	9-25-01 0945
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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4

CMLS Sample Data Package Narrative

Contract Number: KH001076OZ

RIN Number: 01D1516 Batch Number: 0109254467 Date: 09/18/01

Data Package Type: Lab-Nstd ISOCS Level: 7dR

Analytical Summary

Location of Analysis RFETS, T130A
Measurement Type Object, by isocs measurement
Statement of Work Number Module RC10-B
Detector(s) Used LeGe, ISOCS-characterized detector, LI004
Software Used for analysis Canberra Industries ProCount 2000 version 1 0a using ISOCS Version 1 2b, and Genie 2K version 1 1
CMLS Procedures Used for Analysis CMLS-019, CMLS-20, CMLS-022, and CMLS-023
MDA Requirements Per contract
Were all MDA requirements met in the analysis __YES __X_NO __N/A
If NO, list the specific MDA that was not met Am-241
Resolution performed The count time was the standard time used for previous swipe samples MDA level was considered acceptable

Efficiency Curve used Dual

CMLS Radionuclide Library Used for Analysis PerfHigh LIB

Source of Library The TABLE OF RADIOACTIVE ISOTOPES by Browne & Firestone, with low abundance Pu and Am peaks taken from "A Reevaluation of the Gamma Ray Energies and Absolute Branching Intensities of U-237, Pu-238, -239, -240, -241, and Am-241," Gunnink, R , Evans, J E , and Prindle, A L , Lawrence Livermore Laboratories, UCRL-52139, October 11, 1976

Unidentified Peaks
All unidentified peaks were dispositioned

Total Propagated Error
Total propagated error is determined from the counting error and the systematic error, when available The systematic error is determined by comparing the ratios of the reported activities of Th-234 and Pa-234m or other pairs of nuclides with established ratios or the ratio of the activities of different energy lines of a nuclide No systematic error was calculated for this sample

Quality Control Summary
Daily QC check source(s) counted? __X__YES _____NO

Parameters within specification? _X__ YES ___ __NO

Action taken if not within specification

Recount within specification? ___YES _____NO __X__ N/A

Do all QC samples meet the Data Quality Objectives? ___X__YES _____NO

If No, list specific QC sample ID and the DQO that was not met

QA Background Count Performed? __X___YES ___ ___NO

If No, Explanation

QA Criteria

Upper and lower boundaries have been established for peak centroid warning and control limits for selected energy lines Upper and lower boundary limits for peak centroids are set as absolutes from the calibration centroids FWHM and activity parameters are controlled at 2 and 3 sigma limits for selected energies that cover the full range of energies in the spectrum The limits for the QA parameters are derived from a running mean of the QA data collected since the initial calibration of the detector for the N-sigma parameters

Nonconformance & Operational Variances

None

Discussion

The activity reported for Th-234 is the recommended activity for U-238

MDA Calculation - Currie Method as specified in the Genie 2000 Customized Tools Manual, Appendix B, Basic Algorithms

Canberra Project Manager/Manager's Designee Comments
"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature "

"I certify that this electronic image, and all hardcopies produced from this image, accurately represents the data and is in compliance with the RFETS specific requirements, both technically and for completeness, other than the conditions detailed above or in the sample data package narrative Release, by submission through email, the data contained in this electronic image and the computer-readable EDD (as applicable), has been authorized by the laboratory Manager or the Manager's designee "

Larry Umbaugh	Laboratory Director	10/01/01
Signature	**Title**	**Date**

7

QC Background and QC Performance Check Data were performed as required and were acceptable. Hardcopy printouts are on file at the CMLS office and are available upon request.

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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Analysis Results Header 9/26/2001 8 14 03 AM Page 1

```
*************************************************************************
*****       G A M M A   S P E C T R U M   A N A L Y S I S       *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
*************************************************************************
```

Report Generated On 9/26/2001 8 14 03 AM

RIN Number 01D1516
Analytical Batch ID 0109254467
Line Item Code RC10B019

Filename A \G1900005 CNF

Sample Number 01D1516-001 001
Lab Sample Number CMLS-599
Sample Receipt Date 9/25/2001
Sample Volume Received 1 00E+000 grams

Result Identifier N/A

Peak Locate Threshold 3 00
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 1 500 keV

Sample (Final Aliquot Size) 1 000E+001 grams
Sample Quantity Error 0 000E+000
Systematic Error Applied 0 000E+000

Sample Taken On 9/12/2001 12 45 00 PM
Acquisition Started 9/25/2001 10 57 32 AM

Count Time 3600 0 seconds
Real Time 3604 0 seconds
Dead Time 0 11 %

Energy Calibration Used Done On 7/24/01
Energy = -0 283 + 0 250*ch + -7 58E-008*ch^2 + 9 83E-012*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On 9/25/01
Efficiency Geometry ID 01D1516

Analyzed By Sheri Chambers Date 9/25/01

Reviewed By Larry Umbaugh Date 9/26/01

10

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Sample and QC Sample Results Summary 9/26/01 8 14 03 AM Page 2

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID 01D1516-001 001

Analytical Batch ID 0109254467

Sample Type (Result Identifier) G19

Lab Sample Number CMLS-599

Geometry ID 01D1516

Filename A \G1900005 CNF

Detector Name LEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/grams)	2-Sigma Uncertainty (pCi/grams)	MDA (pCi/grams)
K-40	0 00E+000	0 00E+000	2 12E+001
TL-208	0 00E+000	0 00E+000	3 61E+000
PO-210	0 00E+000	0 00E+000	3 54E+005
BI-212	0 00E+000	0 00E+000	5 47E+001
PB-212	0 00E+000	0 00E+000	3 56E+000
BI-214	0 00E+000	0 00E+000	6 45E+000
PB-214	0 00E+000	0 00E+000	5 17E+000
RA-226	4 87E+002	3 31E+002	4 23E+001
AC-228	0 00E+000	0 00E+000	1 05E+001
TH-230	0 00E+000	0 00E+000	4 05E+002
Th-231	1 01E+002	2 85E+001	3 24E+001
PA-234	0 00E+000	0 00E+000	6 61E+000
PA-234M	8 59E+003	7 03E+002	4 33E+002
TH-234	4 72E+003	7 58E+002	2 89E+001
U-235	8 07E+001	1 07E+001	2 62E+000
AM-241	0 00E+000	0 00E+000	5 40E+000

11/11